REMARKS/ARGUMENTS

Rejection of claims 1, 2, and 6-12 under 35 U.S.C. 102(e) as being anticipated by Nozoe et al. (US 6,777,677B2).

Claim 1 of present invention recites a defect root cause analysis comprising the steps of providing a die having a plurality of defects, dividing the defects into three defect types, performing a defect inspection to detect the sizes and locations of the defects, using three methods to perform a chemical state analysis corresponding to each defect type, performing a mapping analysis according to a result of the chemical state analysis, analyzing the root cause of the defects, and modifying the semiconductor process causing the defects.

Claim 7 of the present invention recites another defect root cause analysis comprising the steps of providing a die having a plurality of defects, performing a voltage contrast to identify the location of the defects, cutting the die with a FIB to expose a cross-section of the die, performing a chemical state analysis on the cross-section of the die, performing a mapping analysis according to a result of the chemical state analysis, and modifying the semiconductor process causing the defects to reduce the number of defects in the die.

Nozoe in Col 15 lines 45-48 only suggested the "roughness review mode is not easily influenced by the radiation of beam current and scan speed and therefore it is not particularly required to control the beam radiation condition". Nozoe however did not explicitly teach the defects are located on the surface of the test sample and are equal to or larger than 0.2 μm, single phase, or thick particles, as disclosed in claim 11 of the present invention. Nozoe thus fails to disclose the second defect type of the present invention.

Additionally, Nozoe in Col 48, lines 34-45 only suggested that "a voltage contrast review mode can be used to execute a review by utilizing the

phenomenon that brightness of the SEM images differs in the normal circuit pattern and the defect generating circuit pattern because the amount of secondary electron reaching at the detector changes depending on the electrical characteristic and the energy of secondary electron generated from the surface of the sample when the surface is charged." Applicant submits that Nozoe in the above passage still does not explicitly teach the defects are located on the surface of the die and are smaller than 0.2 μm, not single phase, or not thick particles, as disclosed in claim 12 of the present invention. Nozoe thus fails to disclose the third defect type of the present invention.

Moreover, as defined in paragraph [0026] of the original disclosure, the mapping analysis of the present invention involves first forming the defects into a defect pattern and then comparing the defect pattern with a predetermined pattern obtained from a previous semiconductor process. Inspection of Fig. 4 of the present invention further reveals a schematic diagram of a chemical state distribution according to a result of the mapping analysis 240.

The passage in Col. 12, lines 31-51 cited by the Examiner pertains to the alignment procedure found in Fig. 4 of the cited reference, and is not equivalent to a "mapping analysis" of the present invention. Applicant also asserts that there is NO explicit teaching of the claimed "mapping analysis" as found in claim 1 in the passage in Col 10, lines 5-33 of Nozoe.

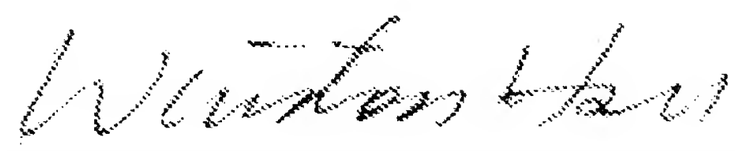
As Nozoe clearly fails to explicitly teach the second defect type and the third defect type of the present invention, as well as the mapping process of the present invention, applicant submits that the methods disclosed in claims 1 and 7 are patentable over the cited reference. Reconsideration of claims 1 and 7 is respectfully requested. As claims 2 and 6-12 are dependent upon claims 1 and 7, applicant asserts that if claims 1 and 7 are found allowable, claims 2 and 6-12 should additionally be found allowable.

Rejection of claims 3-5 under 35 U.S.C. 103(a) as being unpatentable over Nozoe et al. (US 6,777,677 B2) in view of Moore et al (US 6,777,674 B2).

Claims 3-5 are dependant upon the currently amended claim 1. Applicant asserts that if claim 1 is found allowable, claims 3-5 should additionally be found allowable as being dependant on claim 1.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Sincerely yours,



Date: 05/21/2008

Winston Hsu, Patent Agent No. 41,526
P.O. BOX 506, Merrifield, VA 22116, U.S.A.
Voice Mail: 302-729-1562
Facsimile: 806-498-6673
e-mail : winstonhsu@naipo.com

Note: Please leave a message in my voice mail if you need to talk to me. (The time in D.C. is 12 hours behind the Taiwan time, i.e. 9 AM in D.C. = 9 PM in Taiwan.)